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EVALUATION OF MOUNTAIN PINE BEETLE INFESTATIONS ON THE SQUAW CREEK RANGER DISTRICT, GALLATIN NATIONAL FOREST, MONTANA

by

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The mountain pine beetle, Dendroctonus ponderosae Hopk., has occurred in outbreak proportions in lodgepole pine stands in the West Gallatin River drainage since 1969. Infested areas were evaluated August 2-6, 1971, to determine the presence of current attacks in areas where infested trees were recently cut and burned. A ground check of infested areas mapped during the 1971 aerial detection survey was also conducted.

SURVEY METHODS

Aerial detection surveys were flown on the Squaw Creek Ranger District July 29-30. Locations of all groups of "red tops" or fading lodgepole pine were mapped for field checking. Infestations were examined in Logger, Hellroaring, Squaw, Swan, Portal, and Dudley Creeks. Spot examinations were made in major tributaries of the West Fork drainage (Fig. 1). Each area was examined for occurrence and frequency of trees successfully attacked in 1971.

RESULTS

Location and intensity of infestation.--Felling and burning of 1970 brood trees apparently did little to reduce the potential for increase in Logger Creek drainage. New mountain pine beetle attacks were prevalent throughout the drainage. Many standing trees were scorched during the process of burning the 1970 brood trees, and have subsequently become infested by Ips sp. Numerous additional lodgepole pines were injured during skidding operations. These trees are weakened and may be susceptible to beetle attack.

Trees attacked in 1971 were found scattered almost to the Spanish Peaks Primitive Area boundary in the Hellroaring Creek drainage. In addition, many 10-to 15-tree groups of red top trees were seen at higher elevations on the south-facing slopes. Suppression was not completed in this drainage before beetle flight occurred.

Only one lodgepole pine attacked in 1971 was detected in the Swan Creek drainage, and three in Dudley Creek. Mountain pine beetle populations appear to be at a low level in both areas, but with the potential for increase in adjacent drainages, surveillance should be maintained in these areas.

New attacks occur as singles, and in widely scattered groups of two's and three's in Squaw Creek drainage. The majority of new attacks were found along the creek bottom.

Fading lodgepole pines attacked in 1970 occur in groups of 4 to 10 trees in the Portal Creek drainage. The majority of trees are on steep, rocky sites. Suppression in this area may be difficult because of accessibility.

New infestations were detected in sections 28, 34, and 35 in the Middle Fork and in sections 2 and 3 of the South Fork of the West Fork drainage. One large group of thirty-five 1971 attacks was found in section 28 in the Middle Fork. Infested trees were 12 inches plus in diameter.

Biological data.--Examinations at this time showed infested trees were in the process of being attacked, with some mountain pine beetles still flying. Adults which had made successful attacks completed a maximum of 2 to 3 inches of gallery. Because trees were undergoing attack, biological data collected during this evaluation, such as brood densities and parasite and predator information, is meaningless. Therefore, broods were not established.

DISCUSSION AND RECOMMENDATIONS

Not all areas mapped during the aerial detection survey were ground checked. But areas examined are probably representative, indicating similar conditions occur on ownership of Big Sky Inc., Burlington Northern, and other private lands.

In order for direct control of bark beetles to be effective, all actually infested trees must be treated. In 1970, beetles began to fly before treatment was completed. This in part explains the reason for the apparently high levels of 1971 attacks in the treated areas. Mixed ownerships, anticipated land exchanges, and poor access to some areas of infestation may adversely limit complete suppression of this infestation.

Based on the above observations, continued mountain pine beetle activity is expected on the Squaw Creek District. A survey is recommended to determine infestation boundaries and number of trees attacked in 1971 in portions of the following drainages: Squaw, Logger, Indian Ridge, Hell-roaring, Portal, and all tributaries of the West Fork drainage. National Forest land above the King Ranch should also be surveyed. The objectives of these surveys are to precisely determine the accomplishments of 1970 control efforts and to collect impact data to help ascertain the losses caused by the mountain pine beetle in infested areas. Surveys can start any time after August 25.

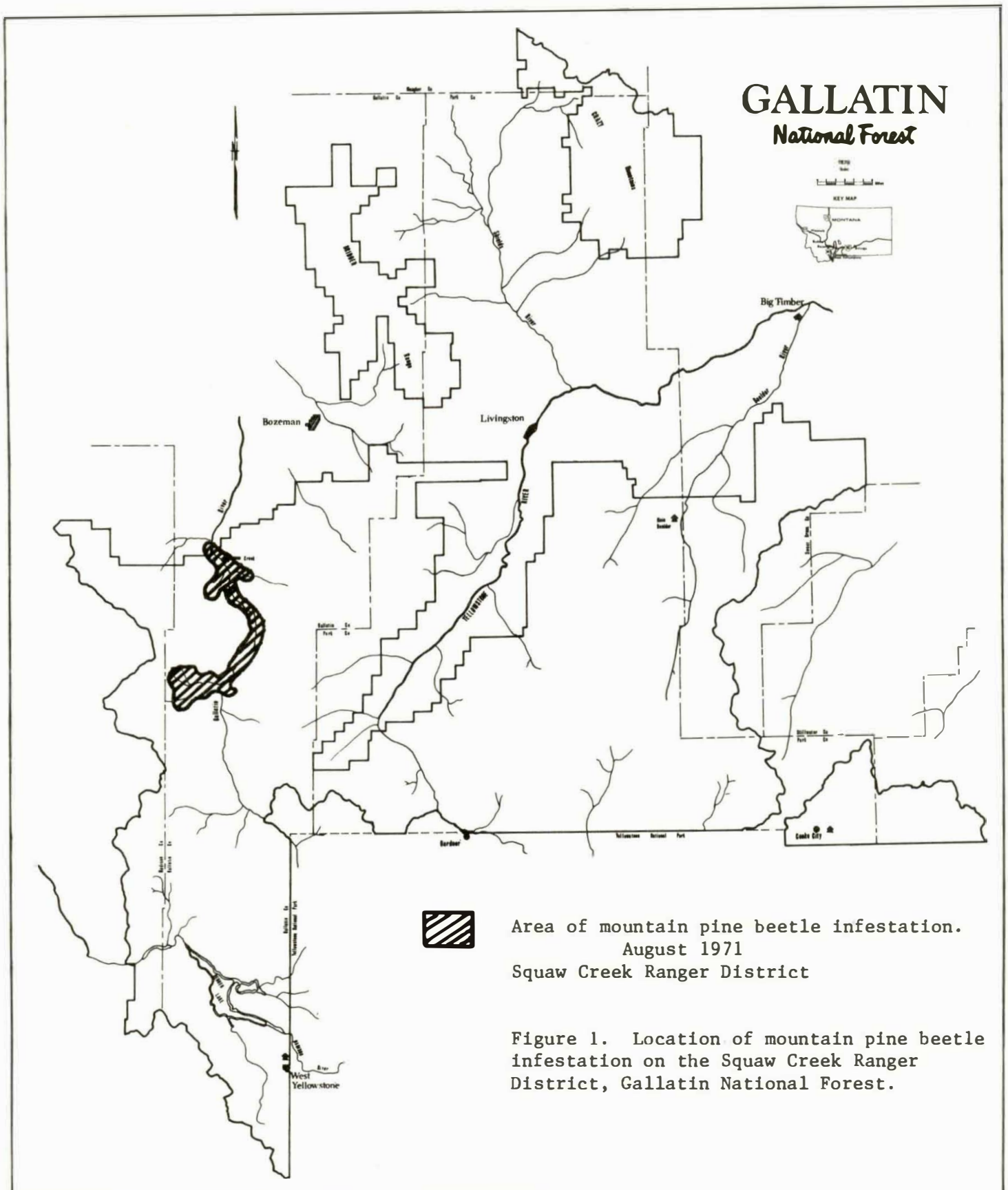

Figure 1. Location of mountain pine beetle infestation on the Squaw Creek Ranger District, Gallatin National Forest.